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ning of each regular issue of the PCT Gazette.*

(54) Title: **GRAFTING OF NITROXYL TERMINATED OLIGOMERS OR POLYMERS ONTO THERMOPLASTIC
POLYMERS**

(57) Abstract: The instant invention relates to a process for the preparation of grafted polymers wherein in a first step A) a oligomer or polymer is prepared by controlled radical polymerization in the presence of a stable free nitroxyl radical or a nitroxylether to obtain a nitroxyl terminated oligomer or polymer and in a second step B) the nitroxyl terminated oligomer or polymer is mixed and reacted with a thermoplastic or elastomeric polymer or copolymer in its molten state at a temperature at which cleavage of the nitroxyl-polymer/oligomer bond occurs, whereby the nitroxyl terminated oligomer or polymer is grafted onto the thermoplastic or elastomeric polymer. A further subject of the present invention is a grafted polymer prepared by said process.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06165

A. CLASSIFICATION OF SUBJECT MATTER

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 135 280 A (COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORG.) 27 March 1985 (1985-03-27) cited in the application	
A	DE 43 28 004 A (BASF) 23 February 1995 (1995-02-23)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0135280	A	27-03-1985	AU 571240 B2	14-04-1988
			DE 3486145 D1	17-06-1993
			DE 3486145 T2	23-09-1993
			EP 0135280 A2	27-03-1985
			JP 1797643 C	28-10-1993
			JP 5006537 B	26-01-1993
			JP 60089452 A	20-05-1985
			KR 9300892 B1	11-02-1993
			US 4581429 A	08-04-1986
			AU 3037884 A	17-01-1985
DE 4328004	A	23-02-1995	DE 4328004 A1	23-02-1995